

Who and what influences delayed presentation in breast cancer?

CC Burgess¹, AJ Ramirez¹, MA Richards¹ and SB Love²

¹ICRF Psychosocial Oncology Group, United Medical Schools of Guy's and St Thomas's Hospitals, London; ²Imperial Cancer Research Fund Medical Statistics Group, Centre for Statistics in Medicine, Institute for Health Sciences, PO Box 777, Headington, Oxford OX3 7LF, UK

Summary This study aimed to examine the extent and determinants of patient and general practitioner delay in the presentation of breast cancer. One hundred and eighty-five cancer patients attending a breast unit were interviewed 2 months after diagnosis. The main outcome measures were patient delay in presentation to the general practitioner and non-referral by the general practitioner to hospital after the patient's first visit. Nineteen per cent of patients delayed ≥ 12 weeks. Patient delay was related to clinical tumour size ≥ 4 cm ($P = 0.0002$) and with a higher incidence of locally advanced and metastatic disease ($P = 0.01$). A number of factors predicted patient delay: initial breast symptom(s) that did not include a lump (OR 4.5, $P = 0.003$), not disclosing discovery of the breast symptom immediately to someone else (OR 6.0, $P < 0.001$), seeking help only after being prompted by others (OR 4.4, $P = 0.007$) and presenting to the general practitioner with a non-breast problem (OR 3.5, $P = 0.03$). Eighty-three per cent of patients were referred to hospital directly after their first general practitioner visit. Presenting to the GP with a breast symptom that did not include a lump independently predicted general practitioner delay (OR 3.6, $P = 0.002$). In view of the increasing evidence that delay adversely affects survival, a large multicentre study is now warranted to confirm these findings that may have implications for public and medical education.

Keywords: patient delay; GP delay; breast cancer; psychological response; type of symptom

For women who present with symptomatic breast cancer there is, by definition, an interval between first detection of symptoms (either by the woman herself or by another) and the time of diagnosis and treatment. Prolonged delays, usually defined arbitrarily as intervals greater than 12 weeks, occurring during this period have been shown to be associated with increased tumour size (Fisher et al, 1977; Pilipshen et al, 1984; GIVIO, 1986; Neave et al, 1990; Rossi et al, 1990) and more advanced stage of disease (Elwood and Moorehead, 1980; Gould-Martin et al, 1982; Robinson et al, 1984; GIVIO, 1986; Machiavelli et al, 1989; Rossi et al, 1990) and with poor long-term survival (Neave et al, 1990; Afzelius et al, 1994).

Given this relationship between delay, stage and survival, it is important to assess in detail the different phases of delay between first detection of a symptom and treatment being commenced. For each of these phases, factors need to be identified that are associated with prolonged delays, so that effective strategies can be planned to reduce the overall interval between first symptom and treatment.

The phases of delay can be considered as follows:

1. Patient delay. The interval between first detection of a symptom and first presentation to a health professional, usually a general practitioner (GP).
2. GP delay. The interval between first presentation to a GP and onward referral to a hospital.

3. Hospital delay. The interval between referral and commencement of treatment. This interval can be further subdivided into the time before first hospital visit, the time between first visit and definitive diagnosis and the time between diagnosis and start of treatment.

This study examines patient and GP delay in a prospective cohort of women presenting to the Guy's breast unit with symptoms that they had discovered themselves. The contribution of tumour-related and psychological factors to each phase of delay has been assessed. The influence of personal characteristics, including age, marital status, social class, previous psychological history, previous benign breast disease, breast self-examination and attendance for mammography, has also been examined, as previous research has suggested that they may be contributory factors (Facione, 1993).

SUBJECTS AND METHODS

The subjects eligible for this study were 196 women, presenting between June 1992 and July 1994 to the breast unit at Guy's Hospital, in whom a diagnosis of invasive breast cancer had been made. They included (1) a consecutive series of patients under the age of 60 years presenting with any stage of cancer ($n = 141$) and (2) a case-control study of patients aged 60 years or over ($n = 55$), comprising a consecutive series of women with stage III and IV disease each matched with two patients, one with operable disease < 4 cm and one with operable disease ≥ 4 cm. The patients under 60 years of age formed part of a prospective cohort being studied in relation to a number of psychosocial parameters, including life events, mood disorder and delay. For patients over 60 years, a case-control design approach was adopted to make the most effective use of limited resources. As the study was concerned with

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Correspondence to: AJ Ramirez, ICRF Psychosocial Oncology Research Programme, Department of Liaison Psychiatry, York Clinic, Guy's Hospital, St Thomas Street, London SE1 9RT, UK

Table 1 Personal and clinicopathological characteristics of patients (n = 185)

	Consecutive series n = 132 (age < 60 years)	Case-control study n = 53 (age ≥ 60 years)	Total n = 185
Mean age (years)	47	70	54
Marital status [- (%)]			
Married/cohabiting	94 (71)	26 (49)	120 (65)
Widowed	3 (2)	12 (21)	14 (7)
Divorced/separated	21 (16)	6 (11)	27 (15)
Single	14 (11)	10 (19)	24 (13)
Social class [- (%)]			
Professional	12 (9)	4 (9)	16 (9)
Intermediate	39 (30)	10 (21)	49 (27)
Skilled (manual/non)	50 (38)	28 (60)	78 (44)
Partly skilled	11 (8)	1 (2)	12 (7)
Unskilled	19 (15)	4 (9)	23 (13)
Unknown	1	6	7
Previous psychological treatment [- (%)]			
No previous treatment	107 (81)	42 (81)	149 (82)
Treatment by GP	14 (11)	7 (13)	21 (12)
Psychiatric outpatient	9 (7)	2 (4)	11 (6)
Psychiatric inpatient	0	1 (2)	1 (1)
Unkown	2	1	3
Tumour size (clinical) [- (%)]			
< 4 cm	83 (63)	22 (42)	105 (57)
≥ 4 cm	49 (37)	31 (58)	80 (43)
Tumour stage [- (%)]			
I/II	113 (86)	36 (68)	149 (81)
III/IV	19 (14)	17 (32)	36 (19)
Nature of first symptom [-(%)]			
With lump	96 (73)	33 (62)	129 (70)
Without lump	36 (27)	20 (38)	56 (30)

women who had detected their symptoms themselves, patients who presented via the National Breast Screening Programme were not included.

A simplified staging classification was used for this study. Patients were classified as having either operable disease (stage I/II), locally advanced inoperable (stage III) or metastatic disease (stage IV) at the time of diagnosis. The operable category was further subdivided according to the tumour size, using a cut-off of 4 cm, as this is taken as the upper limit for breast-conserving surgery.

Women were informed about the study and interviewed by a research psychologist approximately 8 weeks after diagnosis while attending for treatment at the breast unit. Sociodemographic data were gathered and a history of presentation was elicited, using a semi-structured interview developed for the study. The semi-structured interview was developed on the basis of qualitative interviews with 20 breast cancer patients, using questions derived from previous research findings in this area. The interview was then piloted and refined before the main study. The interview details the course of events from discovery of the initial symptom through to diagnosis and treatment. Time intervals between key events were established both from this interview and from the patient's medical notes to determine the time between discovery of symptoms and seeing a general practitioner, and between first appointment with general practitioner and onward referral. The nature of the first and any subsequent breast symptoms were elicited, as well as patients' cognitive, emotional and behavioural responses to the discovery of their symptom. These responses were classified as follows:

1. patients' attributions of their symptom(s) [particular (e.g. 'cancer'/'something serious') vs 'benign breast problem' vs 'vague' (e.g. didn't think much of it)/'none'];
2. fear of symptom(s) (marked/moderate vs some/none);
3. amount of time spent thinking about symptom(s) (marked/moderate vs some/none);
4. disclosing the discovery of symptom(s) to someone else within 1 week (yes vs no);
5. source of motivation for attending general practitioner (self vs other);
6. reason for attending general practitioner (breast symptom(s) vs other reason).

In addition, information was gathered regarding previous psychological treatment, previous breast problems, past breast self-examination habits, previous routine mammography attendance and personal experience of cancer in family and friends. The interviews were tape recorded to enable subsequent scoring according to predefined rating criteria.

Statistical analysis

For comparability with most other reported studies, an arbitrary cut-off for duration of symptoms of at least 12 weeks before the first visit to a GP was used to define patient delay. General practitioner delay was defined as failure to refer a patient after the first attendance, as it has been shown by others that most women who

are subsequently proven to have breast cancer are referred to hospital immediately after their first GP attendance (Jones and Dudgeon, 1992). Possible associations between each of the phases of delay and other factors were assessed using contingency tables (chi-square with Yates' correction) analyses. To discover which factors independently affected each phase of delay, logistic regression analyses were performed.

Inter-rater reliability

Checks of inter-rater reliability were performed on a random sample of 10% of tape-recorded interviews. The average percentage concordance for individual items on the interview was 84%.

RESULTS

Cohort characteristics

Of the 196 patients potentially eligible for study, 185 were included in this analysis. Three patients declined to participate in the study, one of whom had stage III disease and two had stage IV disease. Two stage IV patients died before they could be recruited. A further six cases (3%) were excluded from the study because their breast lump was first detected by a health professional during a health check for hormone replacement therapy ($n = 4$), during a check associated with a cervical smear ($n = 1$) or on admission to hospital for pneumonia ($n = 1$). In each case, the patient reported being unaware of any breast problem before the examination. Four of these women had an operable tumour < 4 cm, one had an operable tumour ≥ 4 cm and one had stage IV disease. Four of the patients had received previous psychiatric treatment. The sociodemographic and clinicopathological characteristics of the remaining 185 patients are shown in Table 1.

Patient delay

Of the 185 women who discovered their breast symptoms themselves, 42% presented to their general practitioner within 2 weeks of that discovery and 137 (74%) within 8 weeks (Table 2). Thirty-six patients (19%) delayed their presentation for 12 or more weeks, the delay being more than 1 year in six cases. The extent of patient delay was related to clinical tumour size ($P = 0.0002$) and to stage ($P = 0.01$) (Table 2).

One hundred and twenty-nine (70%) patients noticed a lump as their first symptom. These included 94 (51%) who noticed a breast lump alone and a further 35 (19%) who noticed a lump in association with at least one other symptom. The remaining 56 (30%) had non-lump symptoms (e.g. pain, nipple changes or discharge,

distortion of the breast) but were unaware of a lump. Among women who noticed a lump (with or without other symptoms) 13 out of 129 (10%) delayed for 12 or more weeks, compared with 23 out of 56 (41%) of those who were unaware of a lump ($P < 0.0001$) (Table 2).

None of the personal characteristics examined were significantly associated with the extent of patient delay. These included age ($P = 0.1$), marital status ($P = 0.3$), socioeconomic status ($P = 0.3$), previous psychological treatment ($P = 0.5$), previous benign breast problems ($P = 0.3$), regular breast self-examination ($P = 0.4$), attendance for mammography as part of National Breast Screening Programme ($P = 0.3$) or personal experience of cancer in family and friends ($P = 0.8$).

Womens' psychological responses to the discovery of a breast symptom were related to the extent of their subsequent delay (Table 3). Among the whole study sample, 13% of those who attributed their symptoms to cancer delayed for 12 weeks or more, compared with 17% who attributed their symptom to a benign cause and 38% of those who made a vague or no attribution ($P = 0.04$). Those who delayed also reported less fear on discovering their symptom ($P = 0.05$). They were also less likely to disclose the discovery of the symptom to someone else immediately ($P < 0.0001$). They were more likely to be prompted by others to seek help than to do so of their own volition ($P = 0.0001$). Those who delayed were more likely to present to their GP with non-breast problems ($P = 0.0006$).

The likelihood of women disclosing the discovery of their first symptom(s) immediately was associated with whether they lived with a partner. Sixty-seven per cent of women who were married or cohabiting disclosed their symptom(s), compared with only 47% of those who were single, widowed or divorced ($P = 0.02$).

Some of the psychological responses to the discovery of a breast symptom were related to whether or not the initial symptom included a lump (Table 3). Those whose symptom included a breast lump were more likely to attribute their symptom to a particular cause ($P = 0.0001$), to experience fear ($P = 0.02$) and to think about their symptom for a marked/moderate amount of time ($P = 0.01$).

The independent effect of the following variables on patient delay was assessed using a logistic regression: nature of first symptom (lump or no lump); symptom attribution; amount of fear and time spent thinking about the symptom; disclosing to another; source of motivation and reason for attending the GP. Twenty-three of the patients did not attend their GP with their first breast symptom, but did so subsequently when they developed a second symptom. The analysis therefore includes data for these 23 patients on the source of motivation and reason for attending the GP in relation to their second symptom.

Table 2 Patient delay according to tumour characteristics ($n = 185$)

Duration of symptoms	Total patients <i>n</i> (%)	Clinical tumour size		Tumour stage		Symptom	
		< 4 cm	≥ 4 cm	I/II	III/IV	With lump	Without lump
< 1 week	39 (21)	26 (25)	13 (16)	38 (26)	1 (3)	32 (25)	7 (13)
1–2 weeks	38 (21)	24 (24)	14 (17)	30 (20)	8 (22)	30 (23)	8 (14)
2–4 weeks	30 (16)	18 (17)	12 (15)	26 (18)	4 (11)	25 (20)	5 (9)
4–8 weeks	30 (16)	20 (19)	10 (13)	22 (15)	8 (22)	24 (19)	6 (11)
8–12 weeks	12 (7)	7 (7)	5 (6)	10 (7)	2 (6)	5 (4)	7 (13)
≥ 12 weeks	36 (19)	10 (10)	26 (33)	23 (15)	13 (36)	13 (10)	23 (41)

Table 3 Psychological response to discovery of first symptoms according to (1) patient delay and (2) nature of first symptom

Psychological responses	Patient delay			Nature of symptom		
	< 12 weeks (n = 149)	≥ 12 weeks (n = 36)	P	Lump (n = 129)	Non-lump (n = 56)	P
Attribution						
Cancer	75 (51) ^a	11 (31)	0.03	71 (55)	15 (27)	0.0003
Benign	48 (32)	10 (28)		43 (33)	15 (27)	
Vague/none	25 (17)	15 (42)		15 (12)	25(45)	
Missing	1				1	
Fear						
Marked/moderate	41 (29)	4 (11)	0.05	38 (31)	7 (13)	0.02
Mild/none	99 (71)	31 (89)		84 (69)	46 (87)	
Missing	9	1		7	3	
Time thinking about symptom						
Marked/moderate	27 (20)	2 (6)	0.07	26 (22)	3 (6)	0.01
Mild/none	107 (80)	33 (94)		91 (78)	49 (94)	
Missing	15	1		12	4	
Disclosing to another						
Yes	91 (68)	9 (27)	< 0.0001	75 (65)	25 (49)	0.07
No	42 (32)	24 (73)		40 (35)	26 (51)	
Missing	16	3		14	5	
Motivation for attending GP						
Self	133 (90)	21 (62)	0.0001	111 (88)	43 (78)	0.1
Other	14 (10)	13 (38)		15 (12)	12 (22)	
Missing	2	2		3	1	
Reason for attending GP						
Breast symptom	133 (90)	22 (65)	0.0006	111 (88)	44 (79)	0.1
Other	15 (10)	12 (35)		15 (12)	12 (21)	
Missing	1	2		3		

^aNumbers in parentheses are percentages.

Type of first symptom, disclosing, source of motivation and reason for attending GP each independently predict patient delay. Patients whose first symptom(s) did not include a lump were more than four times more likely to delay than those whose first symptom did include a lump (OR 4.5, 95% CI 1.7–12.0, $P = 0.003$). Patients who did not disclose the discovery of their symptoms to anyone within a few days of finding it were six times more likely to delay than those who did (OR 6.0, 95% CI 2.3–15.9, $P < 0.001$). Patients who were prompted by someone else to seek medical help rather than do so of their own volition were four times more likely to have delayed (OR 4.4, 95% CI 1.5–13.1,

$P = 0.007$), and those who attended their general practitioner with a non-breast problem were over three times more likely to have delayed (OR 3.5, 95% CI 1.1–11.0, $P = 0.03$).

General practitioner delay

One hundred and fifty-three of the 185 patients (83%) were referred to hospital directly after their first presentation to the GP. In the remaining 32 (17%) cases, referral was delayed. In 16 of the delayed cases, referral was made when the patient returned to the GP with the same symptoms. In the other 16 cases, referral was made after re-presentation with a second symptom. The interval between first presentation to the GP and onward referral to hospital was less than 2 weeks in 75% of cases, but was in excess of 12 weeks in 16% of cases. Ten patients (5%) were not referred for over a year.

Delayed referral by a general practitioner was observed more frequently among patients who were not aware of a lump at the time of presentation to the GP (Table 4). Referral was delayed in 14 out of 41 (34%) patients whose symptoms at presentation to the GP did not include a lump, compared with 18 out of 144 (13%) of those with a lump ($P = 0.002$). Thus, although only 41 out of 185 (22%) patients did not have a lump among their presenting symptoms, non-lump presentations accounted for 14 out of 32 (44%) of all cases of GP delay.

GP delay was related to the age of the patient, the mean age of those who experienced GP delay being 49 years, compared with 55 years for those who were referred on immediately ($P = 0.01$).

Table 4 GP delay – all patients

	Total	Immediate referral	Delayed referral
All patients	185 (100) ^a	153 (83)	32 (17)
Symptoms			
Lump	144 (78)	126 (82)	18 (56)
No lump	41 (22)	27 (18)	14 (44)
Age (years)			
< 35	8 (4)	4 (3)	4 (13)
35–44	43 (23)	34 (22)	9 (28)
45–54	59 (32)	49 (32)	10 (31)
55–64	34 (18)	28 (18)	6 (19)
≥ 65	41 (22)	38 (25)	3 (9)

^aNumbers in parentheses are percentages.

The independent effect of the following variables on GP delays was assessed using logistic regression: nature of presenting symptom (lump or no lump); age. Logistic regression showed only nature of symptom to be independently predictive of general practitioner delay. Patients whose presenting symptom did not include a lump were more than three times more likely to have their onward referral to hospital delayed by their GP (OR 3.6, 95% CI 1.6–8.1, $P = 0.002$).

Combined patient and GP delay

Despite the fact that non-lump symptoms were a risk factor for both patient and GP delay, combined patient and GP delay was a rare phenomenon occurring in only 2 out of 185 patients. This can be explained in part by the fact that 15 out of 23 patients whose first symptom did not include a lump and who delayed their presentation had in fact developed a lump by the time of that presentation.

DISCUSSION

This study has sought to distinguish between patient and GP delay by undertaking detailed semistructured patient interviews, in conjunction with extracting data from medical records to ascertain dates and time intervals. Using this methodological approach, 19% of patients with breast symptoms reported delays of 12 weeks or more before presenting to their GP. This figure is broadly in line with the range reported by three other UK interview-based studies of patient delay: Adam et al (1980) reported that 10% of their sample (all of whom were aged less than 50 years) delayed 12 weeks or more; Cameron and Hinton (1968) reported 23% and MacArthur and Smith (1981) reported 32%. Differences between the results of these individual studies may reflect differences in periods of accrual and age characteristics.

The retrospective nature of the data collection on duration of symptoms, which is intrinsic to any study of patient delay, poses a potential threat to the validity of the findings. The estimates of duration of symptoms could be affected by false reporting or faulty recall on the part of the women. False reporting, when the patient tries to justify or rationalize her behaviour, is probably a greater problem in studies in which duration of symptoms is elicited either by questionnaire or by a health professional directly involved in the patient's care. In this study, interviewers were not involved in the patients' management, the line of questioning was non-judgemental and patients' confidentiality was assured. Like other researchers in this area who have interviewed women retrospectively about their breast symptoms, we were impressed by their precision about the timing of events (Adam et al, 1980; Samet et al, 1988).

The data from this study suggest that these delays may have important prognostic implications. Our findings support those from other studies, cited in the introduction, which show a relationship between delayed presentation and increased tumour size and stage of disease.

Having presented to a GP, the majority of women (83%) in this study were referred on to hospital directly after that presentation. Eighty-two per cent were referred within 4 weeks, which is similar to the 90% proportion of women referred within 4 weeks reported in other studies (Nichols et al, 1981; Jones and Dudgeon, 1992). Also in line with other studies, we found that a small number of women have their referral delayed for several months after initial presentation (Adam et al, 1980; MacArthur and Smith, 1981).

This study has examined a range of factors that might influence patient and GP delay. As far as we are aware, this work is unique in looking at clinical factors, such as nature of the first breast symptoms, alongside women's psychological responses to their symptoms and their personal characteristics and in using a systematic and reliable approach to the assessment of psychological responses. Of the factors examined, discovery of a breast symptom that did not include a lump was the most significant determinant of patient delay; an association that has been suggested in other studies (MacArthur and Smith, 1981; Nichols et al, 1981). A non-lump symptom was also the only factor that we found to predict GP delay. The proportion of our sample (30%) reporting that their first breast symptom did not include a lump was in line with the proportions reported elsewhere (Adam et al, 1980; MacArthur and Smith, 1981).

The women whose symptoms did not include a lump responded differently to the discovery of those symptoms compared with those who first noticed a lump. Those with non-lump symptoms were less likely to attribute their symptom to a definite cause and less likely to report the fears and thoughts that normally prompt help-seeking behaviour. This lack of psychological response to discovery of a non-lump breast symptom may be the mechanism that mediates subsequent delay in presentation. The association between symptoms that do not include a lump and a lack of subsequent emotional response may also explain the relationship between women's absence of suspicion and fear and delay reported by Adam et al (1980) and Cameron and Hinton (1968), as well as the relationship between 'denial' among women presenting with symptoms of breast cancer and delay, which is so widely reported in the social science literature (Henderson, 1966; Greer, 1974; Magarey and Blizzard, 1977; More et al, 1990). None of these earlier studies had evaluated the type of symptom women had developed, alongside their psychological responses. If these findings are confirmed by other work, they would suggest that the public need to be further educated about breast symptoms other than lumps.

The finding that independent risk factors for patient delay included not disclosing the discovery of a symptom and needing to be prompted to attend the GP by someone else suggest that women's help-seeking behaviour is responsive to social influences. This is in line with other work that has shown that the expectations and influence of significant others (e.g. spouses, siblings and children) can determine medical help-seeking behaviour in relation not only to the symptoms of cancer (Coates et al, 1992; Facione, 1993) but also of other illnesses (Zola, 1973; Cameron et al, 1993).

A large multicentre study is now warranted to further test the hypotheses generated by this single institution project. The highly significant finding that non-lump symptoms are a risk factor for both patient and GP delay requires further validation, as well as further definition to look at which particular non-lump presentations may constitute particular risk for delay. Similarly the relationship between delayed presentation and social influences on women needs to be clarified. Is it the presence or absence of a social attachment in itself that is important, or does the quality of the attachment play a part?

Our study has not demonstrated any of the associations between sociodemographic variables, including ethnicity and socioeconomic class, and delay that were reported in North American studies, e.g. (Fisher et al, 1977; Vernon et al, 1985; Samet et al, 1988; Richardson et al, 1992). A large multicentre study with a broad racial and sociodemographic mix of patients will enable

those women who are at high risk of delay in terms of their social and demographic characteristics to be identified, so that effective interventions may be targeted appropriately.

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